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PETROLEUM IN THE USSR

Heinrich Hassmann

Production and Consumption

Figures on USSR petroleum production by regions cannot be given with absolute certainty, but there is good reason to believe that they are approximately as follows:

Production Figures for 1950

<u>Petroleum Region</u>	<u>Production</u> (tons)	<u>Percent of Total</u>
Baku	17,000,000	45.2
Groznyy	1,800,000	4.8
Maykop	1,500,000	4.0
Dagestan	500,000	1.3
Georgia	120,000	0.3
Turkmenistan	1,250,000	3.3
Ukraine	330,000	0.9
Second Baku (Molotov, Ufa, Kuybyshev)	10,600,000	28.2
Emba	1,300,000	3.5
Ukhta-Pechora	800,000	2.1
Central Asia (Fergana Valley)	1,200,000	3.2
Sakhalin	1,200,000	3.2
Total	37,600,000	100.0

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If these production figures are considered from the standpoint of the usual subdivision of petroleum-producing areas into southern and western regions (Baku, Groznyy, Maykop, Dagestan, Georgia, Turkmenistan, Ukraine) and eastern regions (Molotov, Ufa, Kuybyshev, Ukhta-Pechora, Emba, Central Asia, Sakhalin), then it is apparent that the former group produced 59.8 percent of the total output with its 22.5 million tons and the second group produced 40.2 percent with its 15.1 million tons.

The total amount of oil that the USSR had at its disposal for 1950 was approximately 44 million tons with the following breakdown:

<u>Products</u>	<u>Production</u> (million tons)
Petroleum	37.6
Shale oil	0.4
Synthetic oil	1
Total	39
<u>Imports</u>	
Petroleum	4
Synthetic oil	1
Total	5
Grand total	44

It may be estimated that in 1950, the USSR used the petroleum and oil products at its disposal as follows:

<u>Type of Use</u>	<u>Consumption</u> (million tons)
Industrial	12
Transport	10
Agriculture	9
Household	1
Military	8
Total	40
<u>Export</u>	
China and Korea	4
Grand total	44

USSR crude petroleum came from 18,000 to 20,000 oil wells. In 1934, the country had 6,000 wells in operation. This number was increased on an average of 1,500 per year, so that when the German-Soviet war started in 1941, the USSR had about 15,000 producing wells. During the war years, about 2,500 new wells were brought in, a number just about sufficient to replace those wells which were exhausted during those 4 years. The Fourth Five-Year Plan provided for the drilling of 5,500 wells, 3,500 of them in the Second Ba'u. If one estimates that there are approximately 19,000 producing wells, then the average production per well per year would be 2,000 tons and the average production per well per day would be 5.5 tons.

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Petroleum Refining and Cracking

At the beginning of the Third Five-Year Plan, more than three fourths, or about 77 percent, of the USSR's total refining capacity was concentrated in Baku. The Grozny area accounted for 12 percent more and the Maykop area, 5 percent. During the course of the Third Five-Year Plan, USSR refining capacity was considerably expanded.

The USSR began to construct cracking plants in 1928. In 1937, their cracking capacity is said to have reached 9.25 million tons. At that time, production in cracking plants was as follows (in tons):

Gasoline	1,750,000
Illuminating oils	1,500,000
Motor oils	325,000

Most of the processing plants, usually including both refining and cracking installations, are located in the more important petroleum-producing areas, that is, in Baku, Grozny, and the Second Baku. However there are also important installations in petroleum-consuming areas. The chief petroleum refineries are located in the following places:

Andizhan	Kazan'	Nikolayevsk
Baku	Komsomol'sk	Novobogatinskiy
Batumi	Krasnodar	Odessa
Berdyansk	Krasnoyarsk	Okha
Buguruslan	Krasnovodsk	Orsk
Khabarovsk	Kuybyshev	Saratov
Kherson	L'vov	Stalingrad
Drogobych	Leningrad	Sterlitamak
Fergana	Leninsk	Stryy
Gor'kiy	Makhachkala	Syzran'
Gorodki	Mel'nikovo	Tbilisi
Groznyy	Mirzaani	Chelyabinsk
Gur'yev	Molotov	Tu'se
Irkutsk	Moskalvo	Tuymazy
Ishimbay	Moscow	Okhta
Iskine	Nadvornaya	Ufa
Yaroslavl'	Nebit-Dag	Vladivostok
Kanibadam	Nikolayev	

Since several refineries exist in some of these places, for example, 5 in Baku, 4 each in Drogobych and Fergana, 3 in Grozny, and 2 in Molotov, the USSR has at its disposal in 1951 at least 66 petroleum refineries which naturally differ from each other considerably in size and capacity. The total refining capacity of the plants would probably be between 33 and 35 million tons and the cracking capacity between 13 and 14 million tons.

Pipelines

Two pipelines start in Baku. The older Baku-Batumi pipeline, under construction from 1896 - 1906 at a cost of 20 million rubles, was put into operation in 1906. This pipeline is 885 kilometers long and has a yearly capacity of about one million tons. The second Baku-Batumi pipeline, put into operation in 1928, is 840 kilometers long and has a yearly capacity of 1.4 million tons.

Two large pipelines start in Grozny, one running to Tuapse on the Black Sea via Armavir and Maykop, the other going via Armavir and Rostov to Trudovaya, from which point an extension is planned to Dnepropetrovsk on the Dnepr. In addition to this, two pipelines from Makhachkala, as well as a pipeline from Malgobek and a natural gas pipeline from Pravoberezhnyy, terminate in Grozny.

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The Maykop oil fields are connected by pipeline with the Krasnodar refinery. Besides this, the Groznyy-Armavir-Tuapse pipeline runs through the area.

A 40-kilometer pipeline connects the two Georgian oil fields with the city of Kachreti.

A 60-kilometer pipeline, running from Izerbash, Dagestan ASSR, to Makhachkala, was put into operation in 1939. Makhachkala is itself the starting point for two important pipelines, 155 kilometers long, constructed in 1924 and 1935, and running from the coast of the Caspian Sea to Groznyy.

A 550-kilometer pipeline runs from the port of Krasnovodsk on the Caspian Sea to Ashkhabad, capital of the Turkmen SSR. This pipeline carries no crude petroleum but only refined petroleum products which it supplies to the eastern part of Turkmenistan.

Two pipelines, each 160 kilometers long and built in 1939 - 1940, run from Ishimbay to Ufa, and a 150-kilometer pipeline, also built in 1940, runs from Tuymazy to Ufa.

In the Kuybyshev area a petroleum pipeline runs from Yablonovo, via Batraki, to Syzran'. In 1947, a natural-gas pipeline was constructed from the newly discovered gas field of Sultangulovo to Buguruslan, and since 1943 the Buguruslan gas field has been connected by pipeline with Kuybyshev.

The most important pipeline in the Emba area, the 845-kilometer line from Gur'yev on the coast to Orsk, was put into operation in 1936. Its mission is to transport crude petroleum obtained in the coastal area to Orsk for refining. From Orsk the refined products move to industrial areas on the other side of the Urals. There are three branch lines connected with the main pipeline: one from the Kul'sary oil field, via Koschagyl, to Makat; the second from the Baychunas oil field to Iskine; and the third from Rakusha to Dossor. All these lines were constructed in the 1930's.

Since the oil fields of the Fergana Valley are concentrated in a small area and there is adequate refining capacity there to process the crude petroleum, the need for constructing large petroleum pipelines does not exist. However there are two gas pipelines in the area, one going from the Andizhan field to the city of Andizhan, the other from Pavlan-Tash to Leninsk. These pipelines supply Andizhan and Leninsk with gas.

In the Sakhalin oil fields a single pipeline was constructed in stages, starting in 1937. It connects the Ekhabi oil field with Okha, Okha with Nikolayevsk on the mainland, and from there it runs along the Amur, via Komol'sk, to Khabarovsk. This pipeline makes it possible to move Sakhalin crude oil directly to the industrial areas of the Far East.

The richest natural gas deposit of the USSR is concentrated in the Saratov area. In 1942 - 1943, a 26-kilometer pipeline was constructed from the Elshanka natural-gas field to the city of Saratov to supply gas to the power station there. This pipeline served as a model for the 845-kilometer one from Saratov to Moscow, decided upon in 1944 and put into operation in August 1947. This pipeline has a daily capacity of 1,350,000 cubic meters and a yearly capacity of about 500 million cubic meters.

An 800-kilometer natural-gas pipeline has its starting point in the Izhma gas field of the Ukhta-Pechora area, passes through the Molotov oil fields, and terminates in Ishevsk, southwest of Molotov.

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In 1947 - 1948, a 203-kilometer pipeline was built from Kokhtla-Yarve, Estonian SSR, to Leningrad to transport the gas produced in connection with the Estonian shale industry. This line supplies one third of the population of Leningrad with gas. A gas pipeline is being built to Tallin.

Steel Supply for the USSR Petroleum Industry

If it is assumed that the petroleum industry will require one ton of steel for every 30-35 tons of petroleum produced, then with a petroleum, shale oil, and synthetic oil production of about 39 million tons, the steel requirement will be about 1,250,000 tons. The actual steel requirement will probably be higher since the USSR petroleum industry is in the process of extensive expansion, but it will probably not exceed 2 million tons. This would represent less than one twelfth of the USSR 1950 steel production of approximately 27 million tons.

However, in view of the increased steel requirements of other branches of industry, the steel requirements of the petroleum industry present a serious bottleneck. One piece of evidence to this effect is the eagerness of the USSR to import seamless Mannesmann pipes, which are used primarily in the petroleum industry, in the production of shale oil, and in natural-gas extraction.

The future increase in the petroleum industry to meet Stalin's demands will only be possible with a commensurate increase in the steel industry.

Contribution of Synthetic Oil to the USSR Petroleum Supply

Sixty percent of German synthetic-oil plants and hydrogenation plants were located in the Eastern Zone of Germany. Part of these the Russians converted to a Russian stock company, and part they shipped to the USSR where two were set up in Dzerzhinskiy and Gor'kiy to make synthetic aviation gasoline. Two other German installations are said to have been set up near Irkutsk on Lake Baykal. The Fourth Five-Year Plan provided for a 900,000-ton synthetic oil production for 1950. Present synthetic-oil production is about one million tons per year.

The Russian industry has not yet attained the highly technical status and productive capacity of the German industry, but it can become extremely important to the USSR as soon as it is beyond the experimentation stage and has overcome initial difficulties.

USSR Oil Imports

From 1927 to 1937, the USSR was an important petroleum exporter. In 1932, she exported 6 million tons of petroleum, but from 1937 on, her exports decreased steadily and today they no longer play any role except for isolated exports for political reasons. On the other hand, the USSR now strives to import as much oil as possible.

The most important countries in Europe from which the USSR can import petroleum or synthetic oil are Rumania, Hungary, Albania, Czechoslovakia, Austria, and Eastern Germany. The relations between these countries and the USSR are not purely economic but are largely conditioned by political and ideological motives, and the danger exists that economic relations will weaken if other political influences should become dominant in these countries.

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Rumania stands in first place among countries which could make a petroleum contribution to the USSR. With a production of 4.3 million tons in 1950, she held 12th place among petroleum countries of the world. The lack of stable politics and a stable economy has had a deleterious effect on the Rumanian petroleum production, as is shown in the following table:

Rumanian Petroleum Production
(1,000 tons)

<u>Year</u>	<u>Yield</u>	<u>Year</u>	<u>Yield</u>	<u>Year</u>	<u>Yield</u>
1936	8,700	1941	5,453	1946	4,327
1937	7,150	1942	5,665	1947	3,809
1938	6,594	1943	5,273	1948	4,000
1939	6,226	1944	3,512	1949	4,300
1940	5,810	1945	4,690	1950	4,300

The unsatisfactory performance of the Rumanian petroleum industry is the direct result of the poor condition of drills and other oil field mechanical devices which date largely to prewar times. The shortage of proper equipment has become increasingly evident since the US and Great Britain have stopped providing modern petroleum-production equipment for political reasons, and the USSR is able to help out in only a very limited way because of her own extensive requirements.

Of the entire Rumanian output the USSR takes 20 percent as reparations. Half of the remaining 80 percent is needed for Rumania herself, and half is available for export to the USSR. Thus, of the 1950 output, 2.6 million tons went to the USSR and 1.7 million tons remained in Rumania. The great interest of the USSR in Rumanian petroleum is indicated by the fact that in 1950 a pipeline was constructed and put into operation from the Rumanian petroleum center of Ploesti to the Black Sea port of Odessa, permitting direct transport of Rumanian petroleum to the USSR.

Although a gradual upswing in the Rumanian petroleum output has been noted since the war, it is doubtful that it will ever again reach the prewar high of 8.7 million tons, and it is hardly to be expected that Rumanian petroleum export will exceed 4 million tons in the next few years.

Petroleum exports to the USSR from Hungary and Albania cannot be expected since the total production of the former amounted to 550,000 tons while that of the latter was only 350,000 tons. Czechoslovakia and Eastern Germany do not have any petroleum deposits but they have developed synthetic-oil production on a large scale. In Eastern Germany synthetic-oil production amounted to 800,000 tons in 1949 and may have exceeded the million-ton mark in 1950. Czechoslovakia has a production capacity of 1.5 million tons yearly. The USSR could obtain at least one million tons annually from these two areas.

At present, the petroleum production of Austria is estimated at 1.5 to 1.8 million tons. In 1949, about half of this went to Western countries in return for American dollars. The USSR has now stopped this export and diverted the petroleum to herself.

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Imports from all these sources to the USSR probably amounted to about 5 million tons in 1950, that is, about one eighth of the present USSR petroleum production. All of these imports flow into the European USSR. The only area in Asia on which the USSR could place long-range reliance, on the basis of direct participation, would be Sinkiang. The Russian-Chinese treaty of 27 March 1950 assigned the opening up of this province from an economic standpoint to Moscow and Peiping, and the USSR has a 50-percent share in the Russian-Chinese Oil Company which is opening up the petroleum deposits in the area. Petroleum from this source would be extremely important to the USSR industrial area in Central Asia, but it is hardly to be expected that the work of the oil company will progress to such an extent as to permit such export to the USSR in the foreseeable future.

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